

Emerging imaging modalities impact diagnosis of digestive disease

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Recent advances in colonoscopic technology are featured in a number of studies presented at the Annual Scientific Meeting of the American College of Gastroenterology this week. In this research some technologies fare better than others at improving detection of potentially pre-cancerous growths in the colon known as adenomas.

Interim results of a multi-center study of detection rates for [polyps](#) and adenomas using a retrograde-viewing device for the colonoscope, known as the Third Eye Retroscope (TER), found that endoscopists missed more polyps with the colonoscope alone than when using the TER with the colonoscope. In a separate study, investigators found that the overall detection of both polyps and adenomas was improved with use of TER, especially after the endoscopist had completed 15 procedures, suggesting a "learning curve."

The TER is a disposable device that is passed through the instrument channel of a standard colonoscope to provide a retrograde view that complements the forward view of the colonoscopy during withdrawal of the scope from the colon, allowing a rearview or backwards look at the far side of the numerous anatomical folds and bends in the colon.

Dr. Peter Siersema reports interim findings from a randomized, controlled, prospective study of the effectiveness of the TER for increasing the diagnostic yield of colonoscopy. This preliminary analysis of 126 patients who underwent same-day back-to-back colonoscopy and colonoscopy with TER found that the relative risk of missing a lesion with colonoscopy versus TER was 2.57 for all polyps. "When endoscopists used the colonoscope alone, they missed 2.57 times more polyps than when they used the retrograde viewing device along with the colonoscope," explains Dr. Siersema.

Dr. Daniel DeMarco, Medical Director of Endoscopy at Baylor University Medical Center,

presented interim data from a multi-center study involving 17 investigators at nine medical institutions in the United States looking at detection rates and withdrawal of the scope. The prospective study suggests that TER can lead to an enhancement of the detection rate of polyps and adenomas compared to standard colonoscopy. As endoscopists performed more procedures, their detection rates for both polyps and adenomas improved from earlier exams compared to later exams, and the withdrawal times for the later procedures were somewhat shorter than for the earlier procedures.

"Colonoscopy is the most accurate method for evaluating the colon, but some lesions can be missed, especially if they are on the proximal aspect of folds or flexures in the colon," explains Dr. DeMarco. "This study evaluates the learning curve for use of the TER, both in terms of efficacy of detection of lesions and time-efficiency."

Does High Definition Improve Detection of Adenomas?

High definition (HD) colonoscopy has the potential to identify more polyps in the colon, but several different teams of researchers explored whether HD is better than standard "white light" colonoscopy at finding adenomas -- benign growths in the colon that have the potential to become cancerous. High definition (HD) colonoscopes may allow detection of subtle changes in the colonic mucosa, potentially aiding detection of adenomas and hyperplastic polyps.

Findings from a retrospective study of 720 patients at New York Presbyterian Hospital Weill-Cornell Medical Center, in a presentation entitled "Finding More Polyps, but are they Significant?" revealed that while HD colonoscopy improves the overall detection of polyps compared to standard colonoscopy, there is no statistically significant difference in the total number of adenomas

between the two types of exams.

The absolute polyp detection rate for high definition colonoscopy was 36.4 percent compared to 29.4 percent for standard white light colonoscopy. But when comparing the ability to detect adenomas, 53 percent of the polyps found in the HD group were adenomas, compared to 46.7 percent of polyps in the standard white light group.

Researchers at Mayo Clinic also compared adenoma detection using HD vs. standard white light colonoscopy. This retrospective study compared HD colonoscopy to standard white light colonoscopy in 2011 patients, 823 of whom were assigned to HD colonoscopy. The investigators report that there was an increase in adenoma detection rate among the HD group (28.5 percent) compared to the standard white light group (23.4 percent) and that this finding was statistically significant. When the two techniques were compared in five consecutive subgroups, each of 164 patients, adenoma detection rates increased in both the HD and the standard white light groups over time. This increase in adenoma detection rate in both groups over the study period suggests a possible "learning effect" associated with the introduction of high definition colonoscopy.

Adding Spray Dye to HD Colonoscopy Does Not Improve Yield

A multi-center trial of high definition "chromocolonoscopy" by Charles Kahi, M.D. of Indiana University and colleagues found no overall increase in adenoma detection when compared to high definition white light colonoscopy. Dr. Kahi also looked at whether chromocolonoscopy improved detection of non-polypoid growths in the colon, including flat or depressed lesions, which are an increasingly recognized precursor for colorectal cancer.

"Flat and depressed adenomas are inherently more difficult to visualize with standard colonoscopy, while being more likely to harbor high-grade dysplasia or invasive carcinoma than polypoid lesions, irrespective of size," explains Dr. Kahi.

In the study which used high definition

colonoscopy, patients randomized to "chromocolonoscopy" underwent pan-colonic spraying with indigocarmine dye administered by a reusable spraying catheter via the colonoscope accessory channel. The study was performed by experienced examiners with interest in colonoscopy and colorectal cancer screening at four medical centers in the United States. Using high-definition [colonoscopy](#), there was no increase in overall adenoma detection and only a modest increase in flat adenoma and small adenoma detection with indigocarmine chromocolonoscopy.

Source: American College of Gastroenterology

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